(12) UK Patent Application (19) GB (11) 2 157 539 A

(43) Application published 30 Oct 1985

(21) Application No 8508050

(22) Date of filing 18 May 1983

Date lodged 28 Mar 1985

(30) Priority data

(31) 380066 (32) 20 May 1982 (33) US
409870 20 Aug 1982

(60) Derived from Application No. 8313761 under Section 15(4) of the Patents Act 1977.

(51) INT CL[4]
A23L 1/216

(52) Domestic classification
A2B MV5

(56) Documents cited
None

(58) Field of search
A2B

(71) Applicant
Lamb-Weston Inc. (USA—Delaware),
6600 S. W. Hampton Street, Portland, Oregon, United States of America

(72) Inventor
Jerome J. Glantz

(74) Agent and/or Address for Service
Forrester, Ketley & Co., Forrester House, 52 Bounds Green Road, London, N11 2EY

(54) Process for making skin-on potato boats

(57) A method for making skin-on potato boats includes blanching whole potatoes to gelatinize an outer layer beneath the skin, cutting the potatoes in half along their major diameter to expose cut surfaces and in one embodiment exposing such surfaces preferably to starch particles carried in air to abrade away the ungelatinized center portion of the potato halves. In a second embodiment, the center portions are manually removed with a scraping device. In either embodiment, the resulting hollowed-out potato halves may then be blanched, air cooled, parfried and frozen for later reconstruction. After parfrying, the potato boats have a solids content of about 35%—45%. Upon reconstitution, the potato boats may be filled with condiments, such as cheese and the like, and served as so-called "potato skins".

GB 2 157 539 A

2157539

FIG. 1

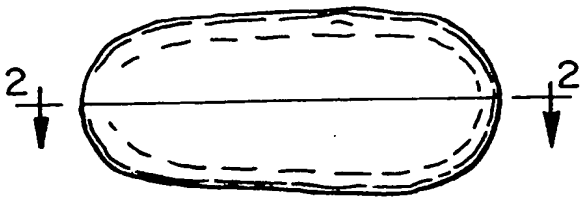


FIG. 2

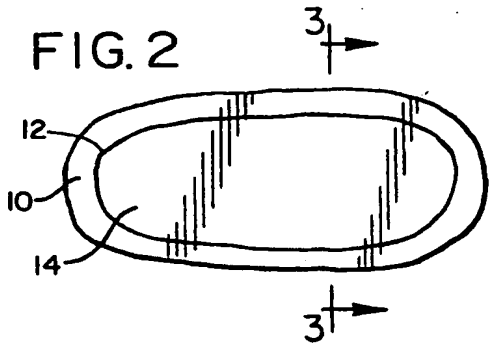


FIG. 3

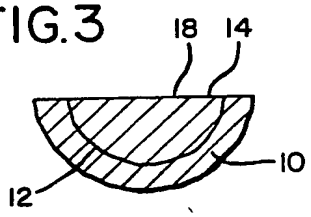


FIG. 4

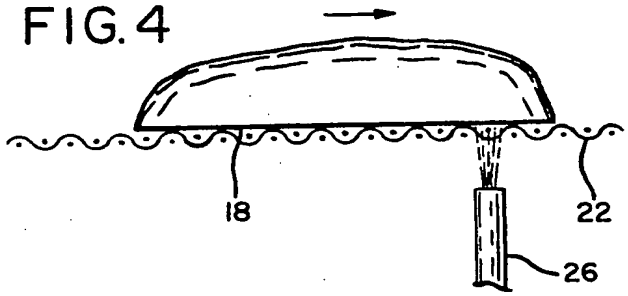


FIG. 5

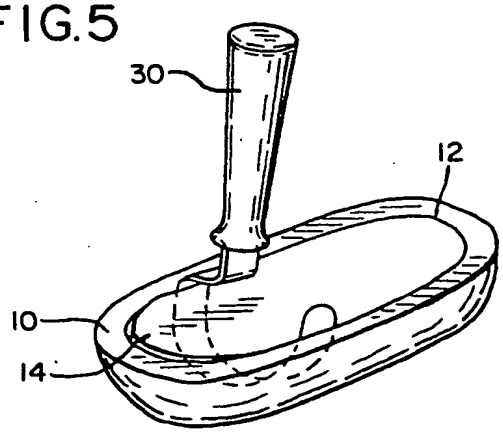
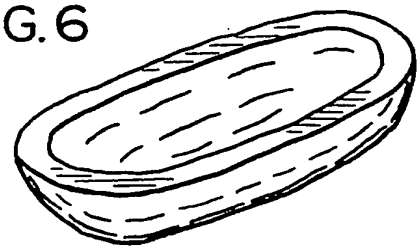


FIG. 6



SPECIFICATION

Improved process for making skin-on potato b ats

The present invention relates generally to potato processing and more particularly to a method for preparing skin-on "potato boats," which are hollowed out potato halves used in making so-called "potato skins."

BACKGROUND OF THE INVENTION

The serving of "potato skins" has been steadily increasing in restaurants and other eating establishments. Potato skins are formed from hollowed-out potato halves or "potato boats" which typically are fried in hot oil and filled with condiments, such as cheese and the like.

Such potato boats traditionally have been prepared at the restaurant by baking and thereby partially cooking whole potatoes, slicing the potatoes in half, scooping out the center portions of the potato halves and then oil frying and/or broiling them. Similarly, potato boats have been prepared commercially for shipment to restaurants and the like by baking and thereby partially cooking whole potatoes, slicing the potatoes in half, manually or mechanically scooping out the center portions of the potato halves, and then freezing them.

Such processes are unsatisfactory for several reasons. First, they tend to produce a nonuniform produce having a variable thickness. As a result, uneven cooking may occur from one potato boat to the next and even within a single potato boat, a potato boat or portion thereof that is too "thin" will overcook and have a texture which is too hard for desirable consumption. Conversely, a potato boat or portion thereof that is too "thick" will undercook and have a texture which is too soft.

Second, a nonuniform product makes it difficult accurately to control the yield of the product, that is, the amount of potato product relative to the quantity of condiments added. A potato boat which is too thick tastes too much like a baked potato, while a potato boat which is too thin lacks the desired consistency.

Third, the product when fried in oil is "heavy" and has a high oil perception, giving it a greasy taste. Moreover, the product tends to be flaky and prone to making the frying oil "dirty".

Fourth, the step of scooping out the center portions of the potato halves is time-consuming, and hence is undesirable for efficient, inexpensive production of potato boats in large quantities.

Finally, the center portions removed from the baked potato halves are in a soft, cooked form, and hence have little value aside from their use as a mashed potato product.

Accordingly, there is a need for a process for making skin-on potato boats having a relatively uniform shell thickness and improved product characteristics.

It is therefore one object of the invention to provide a process for preparing potato boats having a relatively uniform shell thickness.

Another object of the invention is to provide a process as aforesaid which is more efficient from a production standpoint.

A further object of the invention is to provide a process as aforesaid that promotes even cooking of the product, as well as a high degree of yield control.

Yet another object of the invention is to provide a process as aforesaid that is particularly adapted for automated production of potato boats in large quantities.

Still another object of this invention is to provide a process as aforesaid that produces potato boats having improved product characteristics.

Another object of the invention is to provide a process as aforesaid in which the removed center portions constitute a valuable by-product suitable for use in a wide variety of potato products, including "french fries."

Other objects and advantages of the invention will become apparent from the following detailed decription.

SUMMARY OF THE INVENTION

In accordance with the foregoing objects, the present invention comprises a process for preparing skin-on potato boats having a uniform shell thickness and a firm, palatable texture. Whole potatoes are blanched to gelatinize an outer layer of desired thickness beneath the skin of the potato and thereafter sliced in half to form potato halves being exposed cut surfaces. A perceptible ring formed during blanching distinguishes the gelatinized outer layer from the ungelatinized center portion. In on embodiment of the process, the ungelatinized center portions of the potato halves are next abraded away by impinging on abrading means upon the cut surfaces. The abrading means may comprise a stream of abrasive particles such as, for example, starch particles. In a second embodiment, the center portions are manually scooped out using the ring as a guideline. In both embodiments, the hollowed-out potato halves are then preferably blanched, air cooled, parfried in oil and frozen such that they have a solids content of about 35%—45% by weight. The frozen potato boats are conventionally reconstituted, such as by broiling, baking and/or frying in oil.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Figure 1 is a front elevational view of a whole potato after it has been blanched and sliced lengthwise along its major diameter,

Figure 2 is a plan view of a potato half taken along line 2—2 of Figure 1, showing a perceptible ring distinguishing the outer gelatinized layer formed during blanching from the ungelatinized center portion,

Figure 3 is a vertical section taken along line 3—3 of Figure 2,

Figure 4 is a front elevational view of one embodim nt of the invention showing a potato half being passed on a conveyor screen over a blasting jet,

Figure 5 is a perspective view of a second embodiment illustrating the removal of the

ungelatinized center portion with a scraping device,

Figure 6 is a perspective view of a potato half after the ungelatinized center portion has been removed, either by manual scoop or blasting.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

In accordance with the present invention, potatoes are held in storage under conventional accepted conditions, so as not to accumulate excessive amounts of sugar therein. Potatoes of the Russet Burbank variety weighing 4 to 8 ounces (113 to 227 grams) and having a length of 3 to 4½ inches (7.6 to 11.4 cm) and a diameter of 1¾ to 2¾ inches (4.4 to 7.00 cm) are preferred. The potatoes are cleaned using a water spray or some other technique well known in the art.

The potatoes are inspected whereby defective and mis-shaped potatoes are removed. The peels of the potatoes of pierced with about 60—80 small holes to prevent puffing during later processing.

The potatoes are then blanched to kill enzymes present therein and, as illustrated by Figures 2 and 3, to gelatinize a ⅛—½ inch (0.32 to 1.3 cm) outer layer of "heat ring" 10 beneath the skin. It has been found that a ¼ inch (0.6 cm) heat ring works well. The heat ring 10 is translucent and hence is visually distinguishable from the white, opaque ungelatinized center portion 14. The potatoes preferably are blanched in water at a temperature ranging from 170°F to 210°F (77°C to 99°C) for about 3—15 minutes. It has been found that blanching at about 190°F (88°C) for about 7 minutes works well. After blanching, the ungelatinized center portion of each potato constitutes about 25%—75% of the potato by weight depending upon the thickness of the heat ring. For example, the center portion of a potato having a ¼ inch (0.6 cm) heat ring would constitute about 45%—52% of the potato by weight.

The blanched potatoes are cut in half lengthwise along their major diameter to form potato halves having cut surface portions 18 (Figure 3).

Embodiment of Figure 4

In one embodiment of the process, the cut surface portions 18 are then subjected to impingement by a stream of grit-like particles, as, for example, raw potato starch particles, carried in air. This may be accomplished by passing the potato halves on a screen conveyor 22 over one or more blasting jets 26, as illustrated in Fig. 4. The impingement of the starch particles abrades away the ungelatinized center portions 14 of the potato halves, leaving intact the heat rings 10.

During the impingement process, a stream flow rate of about 100 CFM (47,200 cm^3/sec) is preferred, although any flow rate sufficient to abrade away the ungelatinized potato cells will work. It is believed that the ungelatinized center portions are effectively removed because the ungelatinized potato cells shatter when impinged by the potato starch particles. The gelatinized potato cells forming the outer heat ring do not abrade away because they are more elastic and not prone to shattering.

A grit or flail may also be used as the impinging material, but the use of potato starch is advantageous inasmuch as it is a non-foreign material and readily recyclable. Other impinging materials, such as potato flour and crushed bulgur wheat, may also be used. A medium other than air may also be used to carry the abrasive material.

Surface starch, grit or flail remaining on the potato halves after blasting is rinsed off with a water spray. Such starch may by recycled as an abrasive or used in other food products.

After rinsing, the hollowed-out potato halves, such as the one shown in Fig. 6, are inspected and those with excessive defects or undesirable cavities are removed. Such potato halves may be frozen at this time for storage and/or transportation, but preferably are processed further as provided below.

The hollowed-out potato halves may be blanched again so as to remove any high sugars that may have developed during storage and to gelatinize any starch not converted on the initial blanching of the whole potatoes. Such blanching may be at a temperature ranging from about 150°F to about 210°F (about 66°C to about 99°C) and for about 2—10 minutes. It has been found that blanching at about 190°F (88°C) for about 5 minutes works well.

The blanched potato halves may be next air cooled at ambient temperature for about 2—10 minutes to stop the blanching action and, if necessary, to remove some of the moisture from the product and facilitate retrograding of the starch. Air cooling the potato halves at any temperature below 150°F (66°C) will stop the blanching, but cooling at about 70°F (21°C) for about 5 minutes is preferred. The potato halves may be cooled with a water spray or bath instead of air.

The cooled potato halves may be then parfried in hot oil at a temperature ranging from about 325°F to 400°F (163°C to 204°C) for about ½ to 10 minutes — preferably at about 375°F (191°C) for about 5 minutes.

If prepared according to the foregoing parameters, the processed potato halves or potato boats will generally have a solids content of about 35% to 45%, including about 4%—7% oils, by weight, with "thinner" potato boats tending to fall into the higher end of both ranges and the "thicker" products into the lower end. They are firm, hold their shape and have a palatable texture for consumption. For purposes of storage and/or shipment they may be frozen at a temperature ranging from about −30°F to −10°F (−34°C to −23°C) for about 15—30 minutes, and preferably at about −20°F (−29°C) for about 20 minutes.

The frozen potato boats may be reconstituted by frying them in oil at a temperature of about 360°F (182°C) for about 3 minutes, or by other conventional methods, such as broiling or baking. They may also be reconstituted in a microwave oven, but in that event, they should be processed by a longer parfrying so that their solids content, when frozen, is greater than the 35% to 45% range.

Embodiment of Figure 5

In a second embodiment of the process, the potatoes are processed exactly as set forth above,

except that the ungelatinized center portion 14 is manually scooped out with a scraping or cutting device 30, as shown in Figure 5, rather than being subjected to a stream of starch particles. The ring 12 provides a distinct visual guideline demarking the outer heat ring from the ungelatinized center portion, thereby enabling the scraper to produce a product having a markedly uniform product thickness in comparison to prior manually and mechanically scooped products.

Because the uncooked center portion is relatively hard, a substantial portion thereof suitable for a wide variety of uses may be removed in a single piece. A few touch-up passes with the scraping device to remove small fragments of the uncooked center portion adjacent ring 14 may be necessary.

EXAMPLE I

Russet-type potatoes having a length of about 3¾ inches (9.5 cm) and a major diameter of about 2½ inches (6.4 cm) were washed, pierced and blanched at a temperature of about 190°F (88°C) for about 7 minutes. The potatoes were sliced in half lengthwise along their major diameter, exposing cut surfaces. Such cut surfaces were then subjected to a stream of starch particles carried in air.

A standard blasting gun or jet was used. It had a No. 6 (6/16 inch (0.95 cm)) nozzle opening positioned about 3 inches (7.6 cm) away from the cut surfaces and a No. 7 (7/32 inch (0.56 cm)) orifice. A stream flow rate of about 100 CFM (47,200 cm^3/sec) at about 120 psi ($8.3 \times 10^5 N/m^2$) was utilized. A standard mixture of starch granules ranging in size from 10 to 100 microns was drawn into the air stream through a venturi located between the orifice and nozzle. The stream removed the ungelatinized center portions of the potato halves, leaving the outer heat rings intact.

The resulting hollowed-out potato halves were rinsed with a water spray and blanched at a temperature of about 190°F (88°C) for about 5 minutes. Thereafter, they were parfried at a temperature of about 375°F (191°C) for about 5 minutes and subsequently frozen. The frozen potato halves were reconstituted by frying them in oil at a temperature of about 360°F (182°C) for about 3 minutes.

The resulting potato boats had crisp surfaces, mealy potato interiors, low oil perception and golden coloration. They had an average solids content of about 43%, including about 6% oils.

EXAMPLE II

Russet-type potatoes having a length predominantly between 3 and 4½ inches (7.6 and 11.4 cm) (average of about 3¾ inches (9.5 cm)) and a major diameter predominantly between 1¾ and 2¾ inches (4.4 and 7.0 cm) (average of about 2⅛ inches (5.4 cm)) were washed and blanched at a temperature of about 190°F (88°C) for about 7 minutes. The potatoes were sliced in half lengthwise along their major diameter, exposing cut surfaces.

The center portions were manually removed with a scraping device, using the ring as a visual guideline. The resulting hollowed-out potato halves were blanched at a temperature of about 190°F (88°C) for about 5 minutes, and then water cool d at about 70°F (21°C) for about 5 minutes. Thereafter they were parfried at a temperature of about 375°F (191°C) for about 5 minutes and subsequently frozen.

The resulting potato boats after reconstitution had crisp surfaces, mealy potato interiors, low oil perception and uniformly golden coloration. They were slightly thicker than the products of the previous example and had an average solids content of about 38%, including about 4.6% oils.

It will be apparent to those skilled in the art that the gelatinized layer or heat ring formed during the initial blanching of a potato has a uniform thickness throughout. Thus, after such potato is cut in half and the ungelatinized center portion removed by the impinging particle stream, the resulting potato boat has a uniform thickness throughout. Moreover, all potato boats blanched at the same time and temperature parameters have the same thickness, regardless of variations in size. As a result of such uniformity in the product, it will be appreciated that it is easy to evenly cook and maintain high yield control during the product's preparation. Furthermore, the thickness of the product can be easily varied simply by modifying the initial blanching parameters. For example, the thickness can be increased by prolonging the initial blanching period and decreased by reducing such period.

The manual scooping method does not achieve a product with quite the same degree of uniformity of thickness as the impinging particle embodiment. However, the presence of a visual guideline distinctly defining the portion of potato half to be removed enables the scraper to produce a product of relatively uniform thickness and one which achieves the advantages associated with a uniform thickness to a large extent.

The impinging particle embodiment enables potato boats to be produced efficiently and inexpensively in large quantities through the use of automated conveyors, blasting jets and potato handling equipment, and therefore with only a minimal amount of manual labor.

The manual scooping embodiment is advantageous in that the uncooked center portion is removed substantially in a single piece. Thus, such center portion is a valuable by-product suitable for a wide variety of uses and further processing.

Both embodiments produce a product having markedly improved oil perception, texture, taste and coloration in comparison to prior products. Such improvement is due primarily to processing the product in a specified manner and with defined temperature and time parameters. For example, during processing the surface of the product becomes s aled, containing the desired percentage of oil by weight. Thus, unlike prior products, very little oil is absorbed into the product during the oil fry reconstitution. Additionally, the product has a smooth, nonflaky texture. Thus, upon reconstitution there is little tendency of the product to dirty the frying oil.

Those skilled in the art will appreciate that some

deviation from the above procedure, including elimination of some of the steps, will still result in a satisfactory product. For example, the product need not be frozen if it is being prepared for immediate consumption. As a further example, both a mechanical scraping device and the impinging starch particles may be used too hollow-out a potato half after blanching, the scraping device being used initially to remove the innermost segment of the ungelatinzed portion and the starch particles being used to remove the ungelatinized portion closest to the heat ring. In this way, the amount of energy used during the starch-impinging step is minimized. Similarly, the described method can be used to make "open shell" potato boats, that is, hollowed out potato boats that have been cut in half or in thirds, or whole potatoes that have been sliced in, for example, thirds or fourths and the center portions removed.

CLAIMS

1. A method of preparing a potato boat comprising the steps of:

blanching a potato to gelatinize an outer layer of the potato beneath the outer surface, leaving an ungelatinized center portion;

slicing the potato into sections, exposing a cut surface;

impinging an abrading means upon the exposed cut surface of a section whereby the ungelatinized center portion of the potato section will abrade away leaving the gelatinized outer layer of the potato section substantially intact.

2. The method of claim 1 further comprising piercing the outer peel of the potato prior to blanching.

3. The method of claim 1 further comprising freezing the potato section subsequent to impinging.

4. The method of claim 1 further comprising removing a portion of the ungelatinized center portion with a scraping device prior to impinging the abrading means upon the potato section which thereby removes the remainder of the ungelatinized center portion.

5. The method of claim 1 wherein the potato is blanched at a temperature within the range of about 170°F—210°F for about 3 to 15 minutes.

6. The method of claim 1 wherein the potato is blanched to form an outer gelatinized layer of about $\frac{1}{8}$—$\frac{1}{2}$ inch, the ungelatinized center portion constituting about 25% to about 75% of the potato by weight.

7. The method of claim 1 wherein the cut surface of the potato section is impinged with starch particles carried in air.

8. The method of claim 1 further comprising parfrying and freezing the potato section subsequent to impinging.

9. The method of claim 8 wherein the potato section is parfried at a temperature range of about 325°F—400°F for about $\frac{1}{2}$ to 10 minutes and frozen at a temperature range of ab ut −30°F to −10°F for about 15 to 30 minutes.

10. The method of claim 1 further comprising blanching the potato section subsequent to impinging.

11. The method of claim 10 wherein the potato section is blanched subsequent to impinging at a temperature within the range of 150°F—210°F for about 2 to 10 minutes.

12. The method of claim 10 further comprising air cooling the potato section subsequent to the latter blanching at a temperature of about 70°F for about 2 to 10 minutes.

13. A method of preparing a pototo boat comprising the steps of:

blanching a potato to gelatinize an outer layer of the potato beneath the outer surface, leaving an ungelatinized center portion;

slicing the potato in half to form a potato half having an exposed cut surface;

exposing such surface to a stream of starch particles carried in air to abrade away the ungelatinized center portion of the potato half;

parfrying the potato half such that its total solids content is about 35—45% by weight; and

freezing the potato half.

14. The method of claim 13 further comprising reconstituting the frozen potato half by frying it in oil at a temperature of about 360°F for about 3 minutes.

15. A method of preparing a skin-on potato boat comprising the steps of:

blanching a whole potato for about 3 to 15 minutes at a temperature from about 170°F to about 210°F to gelatinize an outer layer of the potat beneath the skin leaving the center portion unblanched;

slicing the potato lengthwise along its major diameter to form a potato half having an exposed cut surface;

exposing such surface to a stream of starch particles carried in air substantially to abrade away an ungelatinized center portion of the potato half;

blanching the potato half for about 2 minutes to about 10 minutes at a temperature from about 150°F to about 210°F;

cooling the potato half in air for about 2 minutes to about 10 minutes at a temperature of about 70°F;

parfrying the potato half for about $\frac{1}{2}$ minute to about 10 minutes at a temperature from about 325°F to about 400°F; and

freezing the potato half by exposing it to air for about 15 to about 30 minutes at a temperature from about −30°F to about −10°F.

16. A method of preparing a skin-on potato boat comprising the steps of:

blanching a whole potato to gelatinize an outer layer of the potato beneath the skin, leaving an ungelatinized center portion;

slicing the potato in half, exposing the ungelatinized center portion; and

abrading away the exposed ungelatinized center portion of the potato half to form a cavity suitable for holding condiments.

17. A method of preparing a potato boat comprising the steps of:

blanching a potato to gelatinize an outer layer of the potato beneath the outer surface, leaving an ungelatinized center portion;

slicing the potato into sections; and
removing the ungelatinized center portion of a potato section, leaving the gelatinized outer layer of the potato section substantially intact.

18. A method of preparing a potato boat comprising the steps of:
blanching a potato to gelatinize an outer layer of the potato beneath the outer surface, leaving an ungelatinized center portion;
slicing the potato into sections; and
scooping out the ungelatinized center portion of a section, leaving the gelatinized outer layer of the potato section substantially intact.

19. The method of claim 18 further comprising freezing the potato section subsequent to scooping.

20. The method of claim 18 wherein the potato is blanched at a temperature within the range of about 170°F—210°F for about 3 to 15 minutes.

21. The method of claim 18 wherein the potato is blanched to form an outer gelatinized layer of about $\frac{1}{8}$—$\frac{1}{2}$ inch, the ungelatinized center portion constituting about 25% to about 75% of the potato by weight.

22. The method of claim 18 further comprising parfrying and freezing the potato section subsequent to scooping.

23. The method of claim 22 wherein the potato section is parfried at a temperature range of about 325°F—400°F for about $\frac{1}{2}$ to 10 minutes and frozen at a temperature range of about −30°F to −10°F for about 15 to 30 minutes.

24. The method of claim 18 further comprising blanching the potato section subsequent to scooping.

25. The method of claim 24 wherein the potato section is blanched subsequent to impinging at a temperature within the range of 150°F—210°F for about 2 to 10 minutes.

26. The method of claim 24 further comprising water cooling the potato section subsequent to the latter blanching at a temperature of about 70°F for about 2 to 10 minutes.

27. A method of preparing a potato boat comprising the steps of:
blanching a potato to gelatinize an outer layer of the potato beneath the outer surface, leaving an ungelatinized center portion;
slicing the potato in half to form a potato half having an exposed cut surface;
removing the ungelatinized center portion of the potato half, leaving the gelatinized outer layer intact;
parfrying the potato half such that its total solids content is about 35%—45% by weight; and
freezing the potato half.

28. The method of claim 27 further comprising reconstituting the frozen potato half by frying it in oil at a temperature of about 360°F for about 3 minutes.

29. A method of preparing a skin-on potato boat comprising the steps of:
blanching a whole potato for about 3 to 15 minutes at a temperature from about 170°F to about 210°F to gelatinize an outer layer of the potato beneath the skin, leaving the center portion unblanched;
slicing the potato lengthwise along its major diameter to form a potato half having an exposed cut surface;
manually scooping out an ungelatinized center portion of the potato half, leaving the gelatinized outer layer of the potato half substantially intact;
blanching the potato half for about 2 minutes to about 10 minutes at a temperature from about 150°F to about 210°F;
cooling the potato half for about 2 minutes to about 10 minutes at a temperature of about 70°F;
parfrying the potato half for about $\frac{1}{2}$ minute to about 10 minutes at a temperature from about 325°F to about 400°F; and
freezing the potato half by exposing it to air for about 15 to about 30 minutes at a temperature from about −30°F to about −10°F.

30. A method of preparing a potato boat, substantially as hereinbefore described with reference to the accompanying drawings and/or Example I or II.

31. A potato boat whenever made by a method in accordance with any one of the preceding claims.

32. Any novel feature or combination of features described herein.

Amendments to the claims have been filed, and have the following effect:—

*(a) Claims 1 to 32 above have been deleted or textually amended.

*(b) New or textually amended claims have been filed as follows:—

CLAIMS

1. A method of preparing a potato boat comprising the steps of: slicing a whole skin-on potato, which has not been previously baked, into sections to form a potato section having an outer potato skin; removing a center portion of the section, leaving a potato layer adjacent the skin; parfrying the potato section; and freezing the potato section.

2. A method according to Claim 1, further comprising blanching the potato section subsequent to removing the center portion and prior to parfrying.

3. A method according to Claim 2, wherein the potato section is blanched at a temperature within the range of about 150—210°F (66°C—99°C) for about 2—10 minutes.

4. A method according to Claim 2, further comprising cooling the potato section subsequent to blanching.

5. A method according to Claim 4, wherein the potato section is cooled in air for about 2—10 minutes at a temperature of about 70°F (21°C).

6. A method according to Claim 2, wherein the

potato section is parfried at a temperature within the range f about 325°F—400°F (163°C—204°C) for about ½ to 10 minutes.

7. A potato boat product prepared in accordance with any one of the preceding claims.

Printed for Her Majesty's Stationery Office by Courier Press, Leamington Spa. 10/1985. Demand No. 8817443.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.